# R0E330850MSRC0

Emulation Memory Board for M32C/80 Series Compact Emulator

# User's Manual

**Keep safety first in your circuit designs!**

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- This product is a development supporting unit for use in your program development and evaluation stages. In mass-producing your program you have finished developing, be sure to make a judgment on your own risk that it can be put to practical use by performing integration test, evaluation, or some experiment else.
- In no event shall Renesas Solutions Corporation be liable for any consequence arising from the use of this product.
- Renesas Solutions Corporation strives to renovate or provide a workaround for product malfunction at some charge or without charge. However, this does not necessarily mean that Renesas Solutions Corporation guarantees the renovation or the provision under any circumstances.
- This product has been developed by assuming its use for program development and evaluation in laboratories. Therefore, it does not fall under the application of Electrical Appliance and Material Safety Law and protection against electromagnetic interference when used in Japan.

| ⚠ **WARNING** | **WARNING** indicates a potentially dangerous situation that will cause death or heavy wound unless it is avoided. |
|---|---|
| ⚠ **CAUTION** | **CAUTION** indicates a potentially dangerous situation that will cause a slight injury or a medium-degree injury unless it is avoided. |
| **IMPORTANT** | This is used in operation procedures or explanatory descriptions to convey exceptional conditions or cautions to the user. |

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# 1. Outline

The R0E330850MSRC0 is an emulation memory board for the M32C/80 Series compact emulator. The memory space can be allocated to the emulation memory by using with the M32C/80 Series compact emulator M30850T3-CPE.

# 2. Package Components

Table 1 Package Components

| Item | Quantity |
|---|---|
| R0E330850MSRC0 emulation memory board | 1 |
| Spacers for fixing the emulation memory board | 4 |
| R0E330850MSRC0 User's Manual (this document) | 1 |
| R0E330850MSRC0 User's Manual (Japanese) | 1 |

# 3. Connection Procedure

The procedure for connecting the R0E330850MSRC0 is shown in Figure 1.



(1) Unscrew the four screws securing the compact emulator.
(2) Pull out the M30850T2-EPBM from the compact emulator control board (hereafter, upper board) vertically, otherwise the connectors may be damaged.

(3) Attach connector J1 of the R0E330850MSRC0 to connector J3 of the upper board, and J2 of the R0E330850MSRC0 to connector J4 of the upper board.
(4) Tighten the spacers (included) in an even, crisscross pattern to secure the R0E330850MSRC0 with such as box wrench.

(5) Attach connector J1 of the M30850T2-EPBM to connector J3 of the R0E330850MSRC0, and J2 of the M30850T2-EPBM to connector J4 of the R0E330850MSRC0.
(6) Tighten the four screws (which are unscrewed in the procedure 1) in an even, crisscross pattern to secure the M30850T2-EPBM with a screwdriver.
(7) After replacing the board, perform the self-check to make sure that the R0E330850MSRC0 has been installed properly.

Figure 1 Connecting procedure of the emulation memory board

## ⚠ CAUTION

Cautions to Be Taken for This Product:

- Before you replace the emulation memory board, shut off the power, otherwise internal circuits may be damaged.
- Insert or pull out the connectors vertically, otherwise the connectors may be damaged.

# 4. Usage (Emulator Debugger)

The required operating environment is described below.
- Integrated development environment:  High-performance Embedded Workshop
- Emulator debugger:  M32C Compact emulator debugger Ver.1.00 Release 00 or later
  (The emulator debugger "M3T-PD308MF" can not be used.)

Set the emulation memory in the Emem dialog box of the emulator debugger start-up.
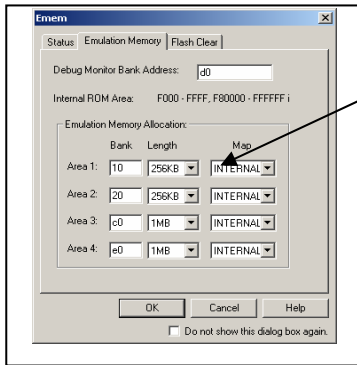
1. Specifying the processor mode
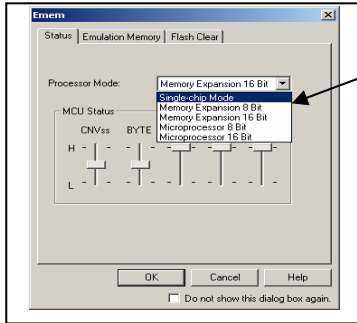


Specifying the processor mode
Select the appropriate processor mode that suits your system.

2. Emulation memory allocation for an extended area



Emulation memory allocation for an extended area
When memory expansion or microprocessor mode is selected, emulation memory can be allocated to the extended area to be debugged (in up to four areas).
* Bank (Set bank address)
  Specify the bank address of the debug target area to be allocated in hexadecimal. If specified as d0, D00000h is the start address of the debug target area.
* Length (Specify size of area)
  Specify the size of the debug target area (256Kbytes or 1Mbytes). If Length is specified to be "256Kbytes", banks 00, 04, 08, and up to FC (every four banks) are specified for Bank; if Length is specified to be "1 Mbytes", banks 00, 10, 20 and up to F0 (every 16 banks) are specified for Bank.
* Map (Specify area map)
  Specify the mapping information ("Internal" or "External") in the specified area. If no area is specified, select "No Use"
  - Internal : The area specified to be "Internal" is mapped into the internal area (emulation memory).
  - External : The area specified to be "External" is mapped into the external area (external resource in the user system)

# IMPORTANT

Notes on Selecting a Processor Mode of the M30850T3-CPE:
- When setting single-chip mode, do not connect to this product.
- When setting memory expansion mode, the level of the pin CNVSS of the MCU status should be "L".
- When setting microprocessor mode, the level of the pin CNVSS of the MCU status should be "H".
- When setting memory expansion mode or microprocessor mode, the level of the pins RDY# and HOLD# of the MCU status should be "H".

Notes on Using Expansion Emulation Memory:
- MCU internal resources are automatically selected as SFR and RAM areas regardless of settings.
- For a reset vector area, memory of the emulator is always selected regardless of the setting
- When memory expansion mode is set as a processor mode, internal ROM area is automatically allocated to the internal Flash memory. Therefore, it is not necessary to deliberately specify expansion emulation memory in order to allocate the internal ROM area.
- The 4MB memory mounted in the product can be allocated to the external area. Set memory allocation so that the total of the 4 Length values does not exceed the emulation memory size (4MB). However, the emulation memory is 3.25MB in memory expansion mode.
- Be careful that the specified areas do not overlap one another.
- Except for the SFR, RAM, ROM and internally reserved areas, all areas other than the set area are externally accessible.
- In Map, the areas where "No Use" is selected, and is unspecified are allocated to external resources. When "External" is specified, only the downloaded speed is different.
- Do not set the following areas for memory allocation of the MCU. Set these areas referring the specifications of the MCU.
  (1) Area allocated for multiplex bus   (2) Unusable area

## 5. Specifications

| Applicable compact emulator | M30850T3-CPE |
|---|---|
| Size of emulation memory installed | 4Mbytes |
| Applicable MCU mode | Memory expansion mode, Microprocessor mode |
| Applicable power supply | 3.0 to 5.5 V |
| Maximum operating frequency | 1Ø+1Ø : 32MHz* |
| Emulation memory allocation | Memory expansion mode:   Maximum 3.25Mbytes<br>Microprocessor mode:   Maximum 4.00Mbytes |

*The restrictions in this product operating frequency depend on VCC2 power voltage.
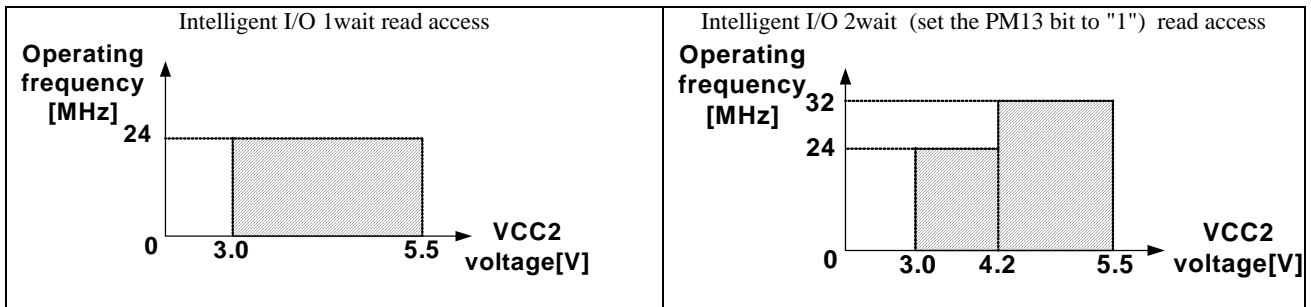(These restrictions only need to be observed when using an emulator.)  (See Figure 2)



Figure 2 Restrictions in operating frequency when using this product
(When using in single-power supply: VCC1 = VCC2, When using in dual-power supply: VCC1 = 5.0 ± 0.2 [V] fixed)

## 6. Precautions

### ⚠ WARNING

Warnings to Be Taken for This Product:
- Do not disassemble or modify this product. Personal injury due to electric shock may occur if this product is disassembled and modified. Disassembling and modifying the product will void your warranty.

Warning for Installation:
- Do not set this product in water or areas of high humidity. Make sure that the product does not get wet. Spilling water or some other liquid into the product may cause unrepairable damage.

Warning for Use Environment:
- This equipment is to be used in an environment with a maximum ambient temperature of 35°C. Care should be taken that this temperature is not exceeded.

### ⚠ CAUTION

Cautions to Be Taken for This Product:
- Use caution when handling this product. Be careful not to apply a mechanical shock.
- Do not touch the connector pins of this product directly. Static electricity may damage the internal circuits.

Caution to Be Taken for System Malfunctions:
- If the emulator malfunctions because of interference like external noise, do the following to remedy the trouble.
  (1)  Press the RESET button on the emulator upper panel.
  (2)  If normal operation is not restored after step (1), shut OFF the emulator once and then reactivate it.

Caution to Be Taken for Using with M30850T2-CPE and M30870T2-CPE:
- Do not use this product with M30850T2-CPE and M30870T2-CPE.

## 7. Inquiries

For inquiries about this product or the contents of this manual, contact your local distributor.
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